Coast-Valley
Testing, Inc.

Order Number

46953

Reference Number

06-5873

Foundation Exploration

&

Liquefaction Analysis

For

Wright *Company

C/O Tony Bortolazzo

130 Garden Street

Santa Barbara, California 93101

Proposed

Residential Development

222 Santa Barbara Street

Santa Barbara, California 93101

March 27, 2006

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INTRODUCTION

The proposed residential development is to be located at 222 Santa Barbara Street in Santa Barbara, California as shown on Appendix #1.The site is presently developed with (2) existing structures. Site drainage is to the South at slopes of 1 to 2 percent.

It is the purpose of this investigation to provide sufficient information about the soils in the supporting soil mantle to enable a suitable foundation design for the proposed structure. This investigation does not include analysis of any geological conditions such as: faults, fractures, potential geological movement, or slope stability. This investigation was conducted in accordance with presently accepted soils engineering procedures consistent with the proposed development and no warranty is implied.

FIELD INVESTIGATION

The subsurface soil conditions were explored by 4 truck mounted auger borings that were drilled to depths of up to 50.0 feet below present ground surface. Soil samples were obtained during the drilling operations for laboratory testing and analysis and the borings were supplemented by 4-field density test that was performed by the tube method. The boring and density test locations are shown on Appendix # 1, while the boring data is presented on Appendix # 2 thru # 5.

LABORATORY TESTING

Laboratory testing and analysis consisted of soil field moisture content summary, Maximum Density-Optimum Moisture content determinations, field density summary, soil grain size analysis (mechanical and hydrometer method), and soil expansion potential tests. The results of our laboratory testing are presented in the Appendix.

FINDINGS:

1. Ground water was encountered during the exploration at a depth of 7.0 to 8.5 feet below existing grade.
2. In general, the top 36 inches of existing surface soils were found to be loose and porous becoming moderately firm to firm below this depth.
3. The existing surface soils were found to be slightly expansive.
4. At the time of this exploration surface vegetation consist of low grasses and weeds and planted landscape area.

LIQUEFACTION ANALYSIS:

Liquefaction is a process, which occurs when saturated sediments are subjected to repeated strain reversals, due to seismic events. The strain reversals cause an increase in pore water pressure, reducing the shear strength of the soil. Liquefied soils are subject to flow. Consolidation (ie settlement) or excessive strain. Liquefaction typically occurs in loose to medium dense sands and silty sands below the ground water table. Predominately fine-grained soils such as silts or clays are less susceptable to liquefaction. The liquefaction analysis at this site has been analyzed, utilizing the Seed's and Others Method (1985), and the Liquefy Pro Computer Program by "Civil Tech"). Uncorrected SPT readings were obtained by driving a standard 1 3/8-inch diameter split spoon sampler driven by a 140-pound hammer dropped 30 inches with an auto trip device. The percent finer than the 200 sieve has been determined by laboratory testing on representative soil samples. The SPT blow counts and percent passing the 200 sieve are presented on the Liquefaction Analysis in the attached appendix. Based on a magnitude 7.0 earthquake and a ground acceleration of 0.40g a potential for Liquefaction at this site was observed at depths between 18.0 and 25.0 feet below existing grade.

RECOMMENDATIONS:

Total settlement was determined to be 1.14 inches while differential settlement was estimated between 0.57 to 0.75 inches. Both the computer-generated graphic and analytical analysis are presented in the appendix.

The results of the Liquefaction Analysis indicates that the soils at this site are marginally liquefiable and the total settlement (1.14 inches) and the total settlement (0.6 to 0.75 inches) are well within acceptable limits for typical masonry, concrete or wood frame construction. Therefore, no additional measures other than those required in this report (grading and foundation) are required to mitigate the hazards due to Liquefaction.

RECOMMENDATIONS:

It is the understanding of this office that the site will be developed with 3-story wood frame residences, with slab on grade floors as shown on Appendix #1. Based upon the results of our testing and liquefaction analysis, this office recommends the following:

GRADING RECOMMENDATIONS:

1. Remove the existing structures including the foundation systems, and all existing underground man-made facilities.
2. The area to be graded shall be cleared of surface vegetation, including roots and root structures.
3. Within the proposed building areas and for a minimum distance of 5.0 feet beyond the exterior perimeters of the proposed structures, including porches and other appendages, the existing loose surface soils shall be removed to a depth of 36 inches or 18 inches below the bottom of the proposed footings whichever is deeper.
4. The soil engineer shall inspect and approve the exposed cavity.

Continued-

5. Upon approval, the exposed cavity shall be scarified an additional 6 inches, moistened or dried to near optimum moisture content and compacted to a minimum of 90 percent relative compaction, as tested and certified by the soils engineer.

6. The Compaction Standard shall be the ASTM D 1557-91 Method of Compaction.

7. The removed soil, if free of deleterious material may then be replaced in lifts not to exceed 6 inches in depth, moistened or dried to near optimum moisture content and compacted to a minimum of 90 percent relative compaction, as tested and certified by the soil engineer.

8. Positive drainage shall be provided away from the proposed structures, (2 percent minimum for 5.0 feet).

9. In patio areas and walkways, the top 1.0 foot of subgrade soils shall be removed and recompacted to a minimum of 90 percent relative compaction, as tested and certified by the soil engineer.

10. In driveways and/or parking areas, the top 24 inches of subgrade soils shall be compacted to a minimum of 95 percent relative compaction, as tested and certified by the soil engineer.

FOUNDATION RECOMMENDATIONS:

1. All footings shall be continuous.

2. All footing excavations shall be inspected and approved by the soil engineer, prior to the placement of rebar or framework.

3. All exterior footings shall extend a minimum of 24 inches below outside yard grade, while interior footings shall extend a minimum of 24 inches below the concrete slab and sand blanket.

4. All continuous footings shall be reinforced with a minimum of 2-#5 rebar placed 1 in the top and 1 in the bottom of the footing.

5. The concrete slab on grade shall be a minimum of 4 inches thick, and shall be reinforced with #3 rebar at 24 inches on center each way, (placed at mid-depth) and shall be underlain with a 4 inch sand blanket in which an impervious membrane is embedded.

FOUNDATION RECOMMENDATIONS:

6. Concrete slabs on grade (except patio slabs) shall be doweled into adjacent exterior footings using #3 rebar dowels placed at 18 inches on center, embedded 24 inches into the footing and bent 36 inches into the concrete slab.

7. If tile or other brittle surfacing is to be placed over concrete slabs a "slip sheet" is recommended to reduce the potential for reflective cracking.

8. Concrete slabs on grade shall be placed at a maximum slump of 4 ½ inches to reduce shrinkage cracks. In addition, shrinkage/control joints shall be placed at intervals not to exceed 10.0 feet center.

9. The finished structure shall be fitted with rain gutters and down spouts that effectively collect and discharge all roof rain water run-off a minimum 10.0 feet away from the proposed structure.

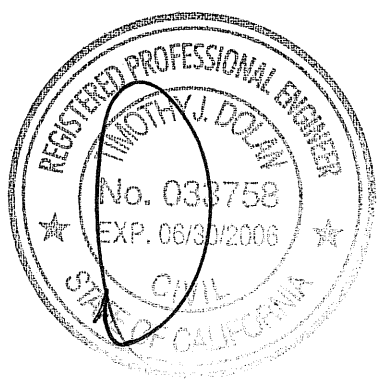
10. Positive drainage shall be provided away from the proposed structure (2 percent minimum for 5.0 feet; 1 percent thereafter to a proper drainage device.

11. Based upon compliance with the above recommendations, a maximum safe soil bearing value of 1500 psf may be assumed, with a one-third increase when considering wind or seismic movement.

12. Compliance with the above recommendations will reduce the potential for total settlement to 1 inch and differential settlement to ¾ of an inch in 30.0 feet.

Prepared by:
Brett J. Dolan
Staff Engineer

TJD/cp



Respectfully,
Coast Valley Testing, Inc.

Reviewed & Approved By:
Timothy J. Dolan, President
RCE 33758 Expires 06-30-2006

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* * APPENDIX * *

APPENDIX

I. MAXIMUM DENSITY-OPTIMUM MOISTURE DETERMINATIONS

Maximum Density-Optimum Moisture data was determined in the laboratory using the ASTM D-1557-91 Method of Compaction. The results are as follows:

SOIL TYPE	SOIL DESCRIPTION	DRY DENSITY (LBS/CU.FT)	MOISTURE (%)
I	dark brown silty sand	121.5	11.5
	curve points: (117.3 @ 9.9) (120.4 @ 12.1) (113.2 @ 14.5)		
II	brown silty sand with gravel	128.0	10.0
	curve points: (123.0 @ 7.8) (127.0 @ 9.6) (123.1 @ 12.1)		

II FIELD DENSITY SUMMARY

TEST NUMBER	DEPTH (ft)	SOIL TYPE	FIELD MOISTURE (%)	DRY DENSITY (lbs/cu. ft)	% OF MAXIMUM DRY DENSITY
1	1.5	I	13.2	96.5	79.4
2	1.0	I	18.9	97.8	80.5
3	1.0	I	16.9	101.3	83.4
4	1.5	II	10.8	102.1	79.8

III SOIL PARTICLE SIZE ANALYSIS

MECHANICAL ANALYSIS (Values in percent passing)

SIEVE SIZE	B -1 @ 1.0	B -1 @ 3.0	B -1 @ 5.0	B -1 @ 7.0	B –1 @ 10.0	B –1 @ 12.0	B –1 @ 15.0
3/8	100	100	100	100	100	100	100
No. 4	97	99	100	99	100	100	100
No. 8	92	95	97	97	100	99	100
No. 16	87	91	93	96	99	97	99
No. 30	80	84	84	82	92	96	95
No. 50	63	66	60	78	73	92	88
No. 100	45	47	40	70	47	88	81
No. 200	37	58	32	63	34	83	76

IV SOIL PARTICLE SIZE ANALYSIS

MECHANICAL ANALYSIS (Values in percent passing)

SIEVE SIZE	B –1 @ 25.0	B -1 @ 30.0	B -1 @ 35.0	B -1 @ 40.0	B -1 @ 45.0	B- 1 @ 50.0
3/8	100	100	100	100	100	100
No. 4	99	100	99	100	100	100
No. 8	97	100	96	95	99	98
No. 16	92	100	92	84	98	96
No. 30	85	99	83	68	96	91
No. 50	70	96	58	41	90	69
No. 100	57	90	37	15	80	27
No. 200	47	78	27	7	73	16

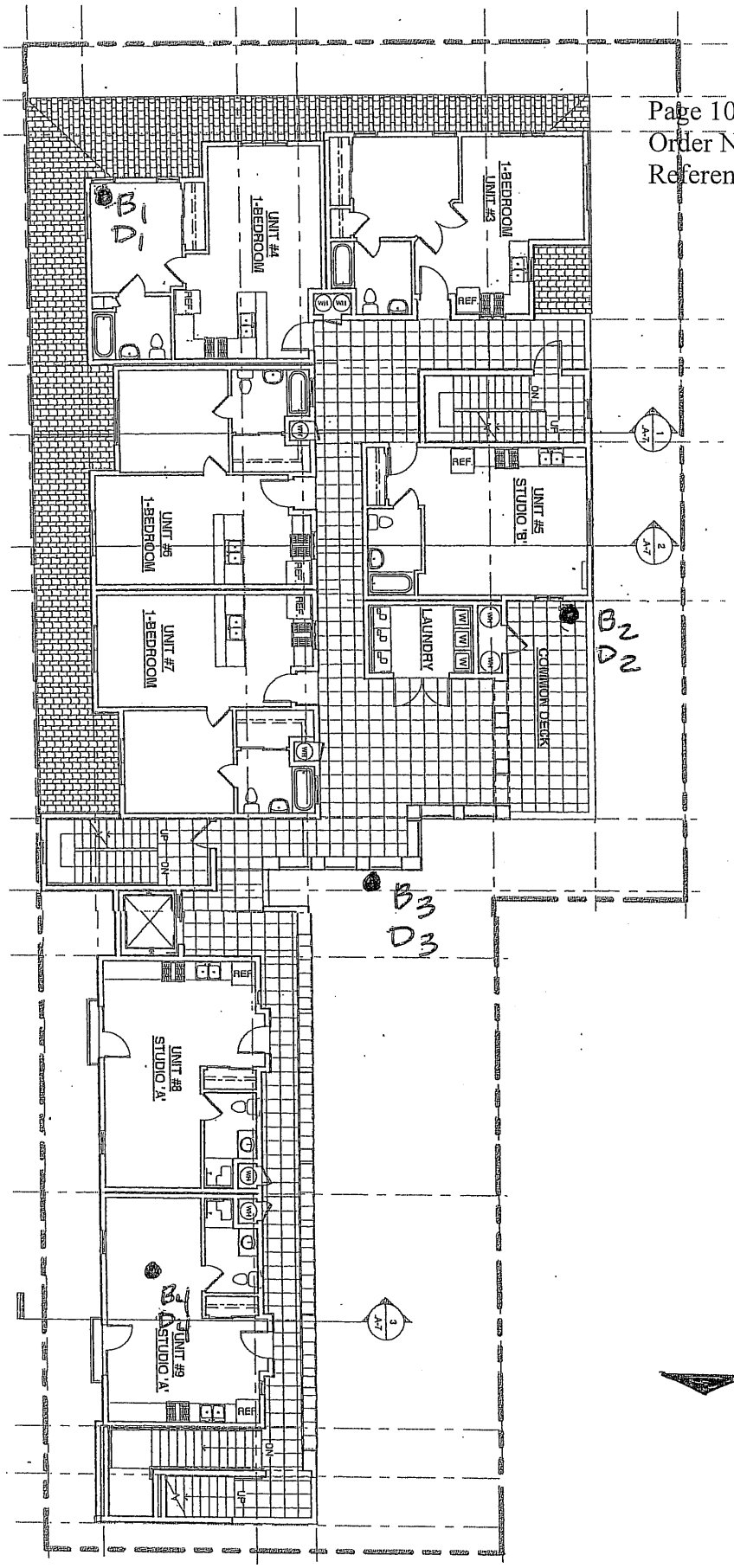
V. BY HYDROMETER

BORING NO.	DEPTH (FT)	SAND (%)	SILT (%)	CLAY (%)	SOIL DESCRIPTION
1	1.0	66	18	16	silty sand
1	3.0	64	20	16	silty sand
1	5.0	74	14	12	sand
1	7.0	34	38	28	clayey silt & sand
1	10.0	68	20	12	silty sand
1	12.0	16	50	34	clayey silt sand
1	15.0	38	38	24	clayey silt sand
1	25.0	52	27	21	clay sand
1	30.0	22	57	21	clayey silt
1	35.0	72	18	10	sand
1	40.0	88	8	4	sand
1	45.0	40	32	28	clayey silt sand
1	50.0	84	9	7	sand

V UBC EXPANSION

The Expansion Soil Index was determined by the present UBC 29-A.

Expansion Determination Procedure and this index were found to – 18 - Soil Type I


B1
D1
UNIT #4
1-BEDROOM
1-BEDROOM
UNIT #3
REF.
W/D
DN
UP
A-7
UNIT #5
STUDIO 'B'
UNIT #6
1-BEDROOM
UNIT #7
1-BEDROOM
LAUNDRY
COMMON DECK
B2
D2
B3
D3
UNIT #8
STUDIO 'A'
UNIT #9
STUDIO 'A'
SANTA BARBARA STREET

NO SCALE

Earthquake Design Factor
UBC 1997 Edition Chapter 16

	Design Values
Seismic Source	**Mission Ridge Arroyo Parida Santa Ana Fault**
Distance to Seismic Source	**3 km ±**
Seismic Zone	**4**
Table 16-I Seismic Zone Factor Z	**0 .40**
Table 16-J Soil Profile Type	**SD**
Table 16-Q Seismic Coefficient Ca	**0.44 Na**
Table 16-R Seismic Coefficient Cv	**0.64 Nv**
Table 16-S Near Source Factor Na	**1.2**
Table 16-T Near Source Factor Nv	**1.46**
Table 16-U Seismic Source Type	**B**

BORING LOG

Boring # 1

Moisture %	Depth	SOIL DESCRIPTION
	1	brown silty sand and gravel damp porous
	2	dark brown silty sand with gravel moist porous to moderately firm
13.3	3	
	4	dark brown silty sand with gravel moist moderately firm to firm
15.3	5	
	6	brown silty sand with gravel very moist moderately firm
22.3	7	
	8	brown sandy silty clay very moist and soft
	9	
22.1	10	
	11	
28.4	12	
	13	
	14	grey brown silty clay saturated and soft
30.3	15	

ground water @ 8.0 feet

BORING LOG
Boring 2

Moisture %	Depth	SOIL DESCRIPTION
	1	brown silty sand and gravel damp porous
	2	dark brown silty sand and gravel moist porous
16.4	3	black brown clayey silt sand moist moderately firm
	4	
17.1	5	brown sandy clay very moist moderately firm
	6	
23.5	7	
	8	
	9	brown sandy silty clay very moist to moderatley firm
25.1	10	ground water @ 7.5 feet

Boring #3

	1	
	2	
14.9	3	dark brown clayey silt sand moist porous moderately firm @ 2.5 feet
	4	
14.3	5	
	6	brown sandy silty clay moist to very moist moderately firm
19.5	7	
	8	
	9	brown silty clay very moist and soft
		ground water @ 7.5 feet
24.6	10	

BORING LOG
Boring #4

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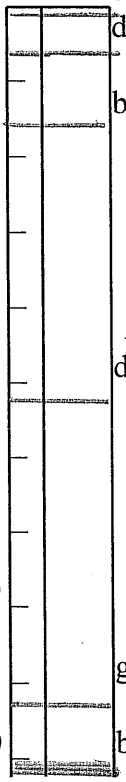
	Depth	SOIL DESCRIPTION
14.6	0	brown silty sand damp porous
		dark brown clayey silt sand moist moderately firm
13.9	5	
22.9		brown silty clay moist to very moist moderately firm to firm
21.2	10	
22.7	15	
17.3	20	
17.1	25	dark brown silty clay moist soft
23.7	30	
15.1	35	
18.7	40	
21.2	45	grey silty sand with gravel moist firm
25.1	50	brown sand wtih gravel moist firm



ground water @ 7.0 feet

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LIQUEFACTION ANALYSIS CALCULATION SHEET

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Input File Name: C:\Documents and Settings\tim\Desktop\liquifaction report\Wright-SB St.liq
Title: Wright
Subtitle: 222 Santa Barbara St.

Input Data:

Surface Elev.=
Hole No.=B-1
Depth of Hole=50.0 ft
Depth of Water Table=7.0 ft
Max. Acceleration=0.4 g
Earthquake Magnitude=7.0

Hammer Energy Ratio, Ce=1.25
Borehole Diameter, Cb=1.15
Sampeling Method, Cs=1
SPT Fines Correction Method: Modify Stark/Olson
Settlement Analysis Method: Tokimatsu / Seed
Fines Correction for Liquefaction: Modify Stark/Olson
Fine Correction for Settlement: Corrected in Liquefaction
Average Input Data: Smooth

Depth ft	SPT	Gamma pcf	Fines %
5.0	10.0	120.0	42.0
10.0	8.0	128.0	62.0
15.0	11.0	125.0	81.0
20.0	10.0	125.0	44.0
25.0	12.0	130.0	47.0
30.0	18.0	135.0	78.0
35.0	36.0	130.0	27.0
40.0	38.0	120.0	7.0
45.0	24.0	135.0	73.0
50.0	38.0	130.0	16.0

Output Results: (Interval = 5.00 ft)

CSR Calculation:

Depth ft	gamma pcf	sigma tsf	gamma' pcf	sigma' tsf	rd	CSR	fs (user)	CSRfs w/fs
5.00	120.0	0.300	120.0	0.300	0.99	0.26	1.0	0.26
10.00	128.0	0.610	65.6	0.516	0.98	0.30	1.0	0.30
15.00	125.0	0.926	62.6	0.677	0.97	0.34	1.0	0.34

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20.00	125.0	1.239	62.6	0.833	0.95	0.37	1.0	0.37
25.00	130.0	1.557	67.6	0.996	0.94	0.38	1.0	0.38
30.00	135.0	1.889	72.6	1.171	0.93	0.39	1.0	0.39
35.00	130.0	2.220	67.6	1.346	0.89	0.38	1.0	0.38
40.00	120.0	2.532	57.6	1.503	0.85	0.37	1.0	0.37
45.00	135.0	2.851	72.6	1.665	0.81	0.36	1.0	0.36
50.00	130.0	3.182	67.6	1.841	0.77	0.34	1.0	0.34

CRR Calculation from SPT or BPT data:

Depth ft	SPT	Cebs	Cr	Cn	(N1)60	Fines %	d(N1)60	(N1)60f	CRR7.5
5.00	10.00	1.44	0.75	1.70	27.21	42.0	8.88	27.21	0.32
10.00	8.00	1.44	0.85	1.39	27.28	62.0	13.68	27.28	0.33
15.00	11.00	1.44	0.95	1.22	36.50	81.0	18.24	36.50	2.00
20.00	10.00	1.44	0.95	1.10	24.32	44.0	9.36	24.32	0.27
25.00	12.00	1.44	0.95	1.00	26.50	47.0	10.08	26.50	0.31
30.00	18.00	1.44	1.00	0.92	41.43	78.0	17.52	41.43	2.00
35.00	36.00	1.44	1.00	0.86	49.88	27.0	5.28	49.88	2.00
40.00	38.00	1.44	1.00	0.82	45.04	7.0	0.48	45.04	2.00
45.00	24.00	1.44	1.00	0.77	43.05	73.0	16.32	43.05	2.00
50.00	38.00	1.44	1.00	0.74	42.90	16.0	2.64	42.90	2.00

Factor of Safety, - Earthquake Magnitude= 7.0:

Depth ft	sigC' tsf	CRR7.5 tsf	Ksigma	CRRv	MSF	CRRm	CSRfs w/fs	F.S. CRRm/CSRfs	
5.00	0.20	0.32	1.00	0.32	1.19	0.39	0.26	5.00	
10.00	0.34	0.33	1.00	0.33	1.19	0.39	0.30	1.29	
15.00	0.44	2.00	1.00	2.00	1.19	2.39	0.34	5.00	
20.00	0.54	0.27	1.00	0.27	1.19	0.32	0.37	0.88	*
25.00	0.65	0.31	1.00	0.31	1.19	0.37	0.38	0.96	*
30.00	0.76	2.00	1.00	2.00	1.19	2.39	0.39	5.00	
35.00	0.88	2.00	1.00	2.00	1.19	2.39	0.38	5.00	
40.00	0.98	2.00	1.00	2.00	1.19	2.39	0.37	5.00	
45.00	1.08	2.00	0.99	1.99	1.19	2.37	0.36	5.00	
50.00	1.20	2.00	0.98	1.95	1.19	2.33	0.34	5.00	

* F.S.<1: Liquefaction Potential Zone. (If above water table: F.S.=5)
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Settlement of Saturated Sands:

Depth ft	CSRfs w/fs	F.S.	-	(N1)60	Fines %	d(N1)60	(N1)60s	Dr %	ec %	ds Settlement in.
49.95	0.34	5.00	-	42.91	16.6	0.00	42.91	100.00		
0.000	0.000	0.000								0.000
45.00	0.36	5.00	-	43.05	73.0	0.00	43.05	100.00		
0.000	0.000	0.000								0.000
40.00	0.37	5.00	-	45.04	7.0	0.00	45.04	100.00		
0.000	0.000	0.000								0.000
35.00	0.38	5.00	-	49.88	27.0	0.00	49.88	100.00		
0.000	0.000	0.000								0.000
30.00	0.39	5.00	-	41.43	78.0	0.00	41.43	100.00		
0.000	0.000	0.000								0.000
25.00	0.38	0.96	-	26.50	47.0	0.00	26.50	82.65		
1.030	0.006	0.148								

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	20.00	0.37	0.88	-	24.32	44.0	0.00	24.32	78.43	
1.167	0.007	0.807								
	15.00	0.34	5.00	-	36.50	81.0	0.00	36.50	100.00	
0.000	0.000	1.048								
	10.00	0.30	1.29	-	27.28	62.0	0.00	27.28	84.23	
0.173	0.001	1.082								
	7.00	0.26	1.40	-	26.08	50.0	0.00	26.08	81.81	
0.000	0.000	1.129								

Settlement of Saturated Sands=1.129 in.
qc1 and (N1)60 is after fines correction in liquefaction analysis
ds is per each segment, dz=0.050 ft

Settlement of Dry Sands:

Depth	sigma'	sigC'	(N1)60s	CSRfs	Gmax	g*Ge/Gm		g_eff	
ec7.5	Cec	ec	ds	Settlement					
ft	tsf	tsf		w/fs	tsf		%	%	
%	in.	in.							

	6.95	0.42	0.27	26.12	0.26	691.3	1.5E-4	0.0276	0.0192	0.93
0.0178	2.1E-4	0.000								
	5.00	0.30	0.20	27.21	0.26	593.3	1.3E-4	0.0221	0.0145	0.93
0.0134	1.6E-4	0.007								

Settlement of Dry Sands=0.007 in.
ds is per each segment, dz=0.050 ft

Total Settlement of Saturated and Dry Sands=1.136 in.
Differential Settlement=0.568 to 0.750 in.

Units Depth = ft, Stress or Pressure = tsf (atm), Unit Weight = pcf, Settlement = in.

SPT	Field data from Standard Penetration Test (SPT)
BPT	Field data from Becker Penetration Test (BPT)
qc	Field data from Cone Penetration Test (CPT)
fc	Friction from CPT testing
Gamma	Total unit weight of soil
Gamma'	Effective unit weight of soil
Fines	Fines content [%]
D50	Mean grain size
Dr	Relative Density
sigma	Total vertical stress [tsf]
sigma'	Effective vertical stress [tsf]
sigC'	Effective confining pressure [tsf]
rd	Stress reduction coefficient
CSR	Cyclic stress ratio induced by earthquake
fs	User request factor of safety, apply to CSR
w/fs	With user request factor of safety inside
CSRfs	CSR with User request factor of safety
CRR7.5	Cyclic resistance ratio (M=7.5)
Ksigma	Overburden stress correction factor for CRR7.5
CRRv	CRR after overburden stress correction, CRRv=CRR7.5 * Ksigma
MSF	Magnitude scaling factor for CRR (M=7.5)
CRRm	After magnitude scaling correction CRRm=CRRv * MSF
F.S.	Factor of Safety against liquefaction F.S.=CRRm/CSRfs

Cebs	Energy Ratio, Borehole Dia., and Sample Method Corrections
Cr	Rod Length Corrections
Cn	Overburden Pressure Correction
(N1)60	SPT after corrections, (N1)60=SPT * Cr * Cn * Cebs
d(N1)60	Fines correction of SPT
(N1)60f	(N1)60 after fines corrections, (N1)60f=(N1)60 + d(N1)60
Cq	Overburden stress correction factor
qc1	CPT after Overburden stress correction
dqc1	Fines correction of CPT
qc1f	CPT after Fines and Overburden correction, qc1f=qc1 + dqc1
qc1n	CPT after normalization in Robertson's method
Kc	Fine correction factor in Robertson's Method
qc1f	CPT after Fines correction in Robertson's Method
Ic	Soil type index in Suzuki's and Robertson's Methods
(N1)60s	(N1)60 after seattlement fines corrections
ec	Volumetric strain for saturated sands
ds	Settlement in each Segment dz
dz	Segment for calculation, dz=0.050 ft
Gmax	Shear Modulus at low strain
g_eff	gamma_eff, Effective shear Strain
g*Ge/Gm	gamma_eff * G_eff/G_max, Strain-modulus ratio
ec7.5	Volumetric Strain for magnitude=7.5
Cec	Magnitude correction factor for any magnitude
ec	Volumetric strain for dry sands, ec=Cec * ec7.5

References:

NCEER Workshop on Evaluation of Liquefaction Resistance of Soils. Youd, T.L., and Idriss, I.M., eds., Technical Report NCEER 97-0022.

SP117. Southern California Earthquake Center. Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California. University of Southern California. March 1999.

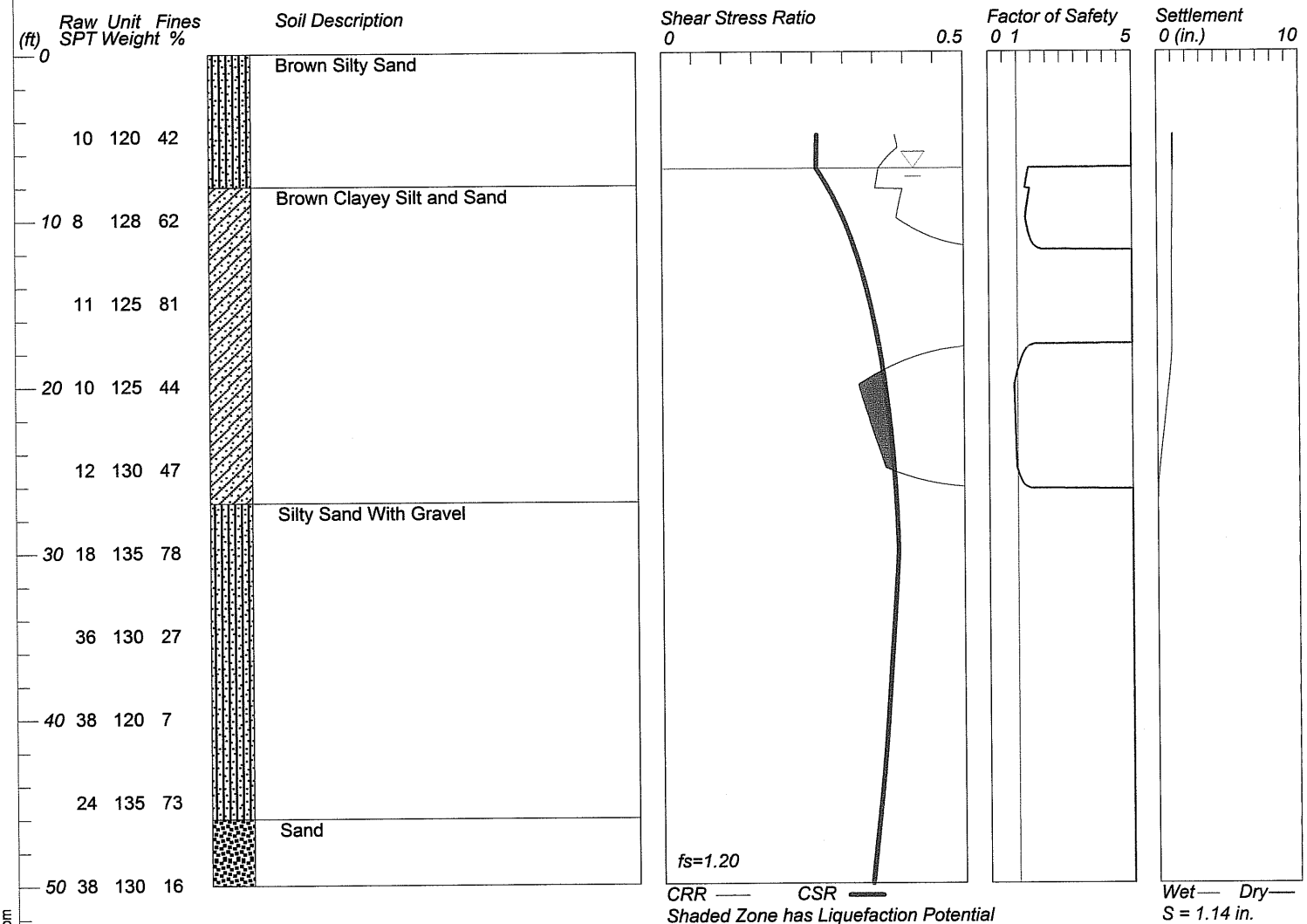
LIQUEFACTION ANALYSIS

Wright

Order Number: 46953
Reference Number: 06-5873

Hole No.=B-1 ***Water Depth=7.0 ft***

Magnitude=7.0
Acceleration=0.4g



LiquefyPro CivilTech Software USA www.civiltech.com

U.S. LABS

REPORT OF "R" VALUE TEST (Test Method ASTM D2844 / CALIF 301)

February 24, 2006

Coast Valley Testing
360 South Fairview, Suite A
Goleta, California 93117

JOB No: 61243
LAB No: 60279

ATTENTION: Fred Best

PROJECT: Coast Valley Testing-Misc. Tests

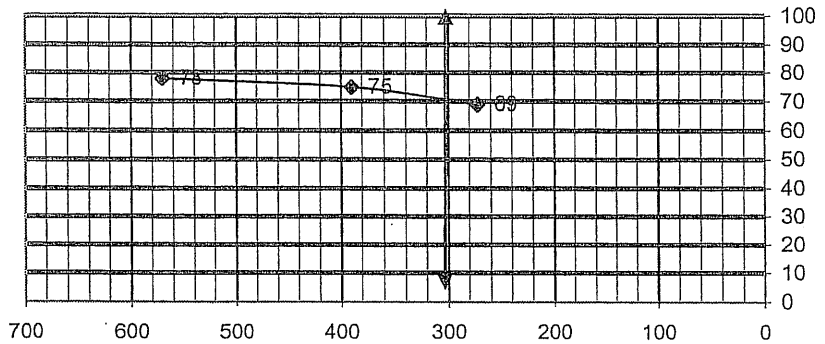
Material: Brown Silty Sand w/ Traces of Gravel
Location: Wright Project
Sampled By: Client
Date Received: 2/21/06

Depth: N/A

(California 202)

GRADING ANALYSIS			
SIEVE SIZE	% PASSING Sample Type. - #4 only	+ & - #4	SPECS.
3"			
2 1/2"			
2"			
1 1/2"			
1"			
3/4"			
1/2"			
3/8"		100	
#4		99	
#8		98	
#16		96	
#30		92	
#50		76	
#100		45	
#200		33.0	(washed)

"R" VALUE BY EXUDATION GRAPH



TEST SPECIMEN	A	B	C	D
COMP. FOOT PRESSURE, psi	220	300	350	
INITIAL MOISTURE %	8.2	8.2	8.2	
MOISTURE @ COMPACTION %	11.2	10.2	9.2	
DRY DENSITY, pcf	119.7	120.7	121.5	
EXUDATION PRESSURE, psi	272	390	570	
STABILOMETER VALUE 'R'	69	75	78	
	R-Value @ Equilibrium =			71

REMARKS:

Respectfully submitted,
U.S. LABORATORIES, INC.

Clarito Colocado
Laboratory Supervisor

Reviewed by:

Tom D. Williams
Vice President

Copies: 1-Coast Valley Testing/Fred B.
jo 1-File

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